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10/698,899	10/31/2003	Niranjan Damera-Venkata	200207907-1	3010

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EXAMINER

KAU, STEVEN Y

ART UNIT	PAPER NUMBER
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2625

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/698,899	Applicant(s) DAMERA-VENKATA, NIRANJAN	
	Examiner STEVEN KAU	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/21/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

ETAILED ACTION

Election/Restrictions

1. The examiner respects the decision made by the PTO office on January 16, 2008 that “the restriction requirement mailed 10125107 is here by vacated. The file is being forwarded to the examiner for new and appropriate action in accordance with MPEP 818.01, 818.02(a), 819, and 821.03. No further action by applicant is required at this time. A new action is forthcoming”.

Thus, claims 1-35 will be further examined in this action.

Response to Arguments

2. This action is responsive to the following communication: an Amendment filed on August 17, 2007.

- Applicant’s arguments, section “Claim rejection under 35 U.S.C. § 112”, August 17, 2007 with respect to 2, 3, 7, 16, 23, 26, 31, 34 and 37 have been fully considered. Since all of these claims have been amended. The rejection of claims 2, 3, 7, 16, 23, 26, 31, 34 and 37 under 35 U.S.C. § 112 Second Paragraph has been withdrawn.
- Objection of Specification is withdrawn from the record since the specification has been amended for correction on 8/17/2007.
- Applicant’s arguments of August 17, 2007 have been fully considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-11 and 21-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. With respect to claim 1, limitation recites, " wherein ones of the output halftone image blocks associated with respective ones of the bits having the first value are derived from respective ones of the contone image blocks and ones of the bits having the second value are derived from respective ones of the graphical code word symbols" (emphasis added by applicant), in which the underlined limitations are not disclosed in the original specification. There is no hardware or software or mathematical derivation support found in the original disclosure for deriving value from "respective ones of the contone image block" and "from ones of the graphical code word symbols".

Regarding claim 3, recites, "wherein the determining comprises producing the bitmap by halfloning a contone patch of the graylevel ~~is determined by the coding rate value~~" (emphasis added by applicant), in which "contone patch" is not disclosed in the original specification.

Claims 2-11 are dependent claims to claim 1 and are rejected for the same reason discussed in the rejection of claim 1 in this section.

Regarding Claim 21, limitation recites, "identifying a second sequence of graphical code word sequence symbols in from the selected ones of the partitioned halftone image second blocks, and extracting the information from the second sequence of graphical code word-sequence symbols" (emphasis added by applicant). "second sequence of graphical code word" is not disclosed in the original specification. This is a new feature introduced in the amended claim. Claims 22-28 are dependent claims to claim 21, and are rejected under 35 U.S.C. 112, first paragraph for the same reason in the rejection of claim 21 in this section.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-11, 18, 28 and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant failed to particularly point out how and in what extent the derivation of values from "contone image block" and "graphical code word" discussed in the claim rejection under 35 U.S.C. 112 first paragraph. Claims 2-11 are dependent claims to claim 1 and are rejected under 35 U.S.C. 112, second paragraph for the same reason discussed in the rejection of claim 1 in this section. The examiner will give a reasonable broadest interpretation for " wherein

ones of the output halftone image blocks associated with respective ones of the bits having the first value are derived from respective ones of the contone image blocks and ones of the bits having the second value are derived from respective ones of the graphical code word symbols”.

Claim 18, 28 and 38, limitation recites, “using the set of probability parameters to select the most a likely sequence of graphical code word symbols” in which applicant failed to particularly point out whether “the set of probability parameters to select a sequence of graphical code word symbols”. “likely” used in the claim language is an uncertain word.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-7, 10-11 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curry (US 5,710,636) in view of Tai et al (Tai) (US 7,218,420) and further in view of Wang et al (Wang) (US 5,337,361)

Regarding claim 1.

Curry discloses A method of processing a contone image, the method comprising: producing blocks of an output halftone image (**Figs. 1, 4, 5 & 6, col 3, lines**

~~31-46) blocks using code words, such that information contained in the code words is embedded in a halftone image~~ from ones of the contone image blocks and ones of the bits of the bi-level bitmap (**"The halftone cells are generated based on bitmap codes and on grayscale image data"**, one skilled in the art understands when a contone image block, or grayscale image data is embedded with bitmap codes, it must be data or bits of data from contone and bits of data from bitmap codes as shown in Fig. 1, & col 2, lines 32-39 & col 3, lines 31-46), wherein ones of the output halftone image blocks (e.g. halftone cells) associated with respective ones of the bits having the first value are derived from respective ones of the contone image blocks (e.g. "The halftone generator 10 transforms spatially periodic grayscale input image sample values into halftone dot patterns", col 3, line 61 through col 4, line 5) and ones of the bits having the second value are derived from respective ones of the symbols (e.g. "The bitmap codes are generated by a bitmap generator 10 based upon a desired pattern to be embedded within halftone image", col 3, lines 36-46).

Curry does not explicitly teach ~~using a halftone screen to generate~~ determining a bi-level bitmap of bits from a graylevel value, wherein each of the bits has a respective one of either a first value or a second value; partitioning the contone image into an array of contone image blocks; ~~halftoning the image blocks~~; using the bi-level bitmap to select ~~some of the halftone image blocks~~ generating a sequence of graphical code word symbols encoding information;

Tai teaches ~~using a halftone screen to generate~~ determining a bi-level bitmap of bits from a graylevel value, wherein each of the bits has a respective one of either a first

value (e.g. black) or a second value (e.g. white, col 12, lines 63 through col 13, line25); partitioning (e.g. creating) the contone image into an array of contone image blocks (e.g. Figs. 6A-C & Figs 21-1 through 21-5 teach forming arrays or matrices of rectangle blocks or “Bricks”, col 8, lines 6-16 & col 10, lines 29-57);

Wang teaches generating (e.g. composing) a sequence of graphical code word symbols encoding information (Figs. 1 & 2, col 2, lines 48-53 & col 5, lines 61-67);

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include determining a bi-level bitmap of bits from a graylevel value, wherein each of the bits has a respective one of either a first value or a second value; partitioning the contone image into an array of contone image blocks taught by Tai to produce smoother image without jagged edges (col 13, lines 29-34), and then to have modified Curry together with Tai to include generating a sequence of graphical code word symbols encoding information taught by Wang to validate or authenticate the finished image.

Regarding claim 2.

Curry discloses wherein the ~~information is embedded at a coding rate that is linked to a graylevel of a contone patch, and wherein~~ determining comprises determining the bitmap is ~~produced by halftoning the constant patch of~~ based on the graylevel value (col 3, line 62 through col 4, line 5).

Regarding claim 3.

Curry discloses wherein the determining comprises producing the bitmap by halftoning a contone patch of the graylevel ~~is determined by the coding rate value~~ (col 3, line 62 through col 4, line 5).

Regarding claim 4.

Curry does not explicitly teach wherein the determining comprises selecting the bitmap is selected from a set ~~predetermined table~~ of bi-level bitmaps.

Tai teaches wherein the determining comprises selecting the bitmap is selected from a set ~~predetermined table~~ of bi-level bitmaps (col 12, line 63 through col 13, line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include wherein the determining comprises selecting the bitmap is selected from a set ~~predetermined table~~ of bi-level bitmaps taught by Tai to produce smoother image without jagged edge.

Regarding claim 5.

Curry discloses wherein the producing comprises producing the output halftone image blocks with a dimension that is different from a corresponding dimension of the respective ones of the contone ~~unselected image blocks are of one dimension and the modified image blocks are of a different dimension~~ **(col 4, lines 57-67)**.

Regarding claim 6.

Curry does not teach wherein the sequence of graphical code word symbols corresponds to a graphical bar code ~~is embedded in the halftone image~~.

Wang teaches wherein the sequence of graphical code word symbols corresponds to a graphical bar code ~~is embedded in the halftone image~~ (**Figs 1 & 2, col 3, lines 58-65**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include wherein the sequence of graphical code word symbols corresponds to a graphical bar code taught by Wang because graphical bar code is correctable (col 3, line 60-64).

Regarding claim 7.

Claim 7 recites identical features as claim 1. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 7.

Regarding claim 10.

Curry disclose an apparatus for performing the method of claim 1 (col 2, lines 33-40).

Regarding claim 11.

Curry discloses an article comprising memory encoded with a program for causing a processor to perform the method of claim 1 (col 3, lines 62 through col 4, line 5).

Regarding claim 29.

Claim 29 recites identical features as claim 1, except claim 29 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 1 are also equally applicable to claim 29.

Regarding claim 30.

Claim 30 recites identical features as claim 2, except claim 30 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 2 are also equally applicable to claim 30.

Regarding claim 31.

Claim 31 recites identical features as claim 3, except claim 31 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 3 are also equally applicable to claim 31.

Regarding claim 32.

Claim 32 recites identical features as claim 5, except claim 32 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 5 are also equally applicable to claim 32.

Regarding claim 33.

Claim 33 recites identical features as claim 6, except claim 33 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 6 are also equally applicable to claim 33.

Regarding claim 34.

Claim 34 recites identical features as claim 7, except claim 34 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 7 are also equally applicable to claim 34.

9. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curry (US 5,710,636) in view of Tai et al (Tai) (US 7,218,420) and further in

view of Wang et al (Wang) (US 5,337,361) as applied to claim 1 above, and further in view of Lapstun (US 6,512,596).

Regarding claim 8.

Curry does not teach error diffusion.

Lapstun discloses a halftoner/compositor, in that he teaches that the halftoning is error diffusion halftoning (col 18, lines 53-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include the halftoning is error diffusion halftoning taught by Lapstun because it gives better result (col 18, lines 55-57).

Regarding claim 9.

Curry does not teach that ~~wherein~~ further comprising diffusing error values determined from the output halftone image blocks.

Lapstun teaches ~~wherein~~ further comprising diffusing error values determined from the output halftone image blocks {e.g. a dither volume provides great flexibility in dither cell} (col 37, lines 6-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Curry to include ~~wherein~~ further comprising diffusing error values determined from the output halftone image blocks taught by Lapstun because it gives better result (col 18, lines 55-57).

10. Claims 12-20 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US 6,252,971) in view of Curry (US 5,710,636) and further in view of Wang et al (Wang) (US 5,337,361)

Regarding claim 12.

Wnag '971 discloses a method of extracting information embedded in a halftone image (**Fig. 11, col 7, lines 1-24**), the method comprising: accessing a bi-level bit map (**"Invisible watermark retrieval depends generally on the pixel-to-pixel comparison between a bitmap of a halftone image and the bitmap of a halftone image having a certain shift relative to itself", one skilled in the art at the time the invention was made knows accessing a bi-level bit map for watermark extraction, col 1, lines 61 through col 2, line 4**); partitioning the halftone image into a plurality of image blocks (**Fig. 6, col 4, lines 1-28**); identifying (**e.g. detecting**) a code word sequence (**e.g. watermark**) in the selected blocks (**e.g. by arranging tiles**) (**Fig. 11, col 4, lines 29-44 & col 7, lines 1-24**); and extracting the information from the code word sequence (**Fig. 11, col 7, lines 1-24**).

Wang '971 does not explicitly teach using the bitmap to select at least some of the blocks.

Curry teaches using the bitmap to select at least some of the blocks (**"The bitmap codes are based upon at least one human readable pattern to be formed within the image", one skilled in the art at the time the invention was made knows to use bitmap to select some of blocks because bitmap codes are generated from those blocks, col 2, lines 35-40 & col 4, lines 1-5**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Wang '971 to include the bitmap to select at least some of the blocks taught by Curry to retrieve halftone cells or blocks for embedded pattern extraction.

Regarding claim 13.

Wang '971 discloses wherein the ~~information is extracted~~ using comprises selecting ones of the image blocks at a rate that is linked to a graylevel of the halftone image (**col 1, lines 58-60**).

Regarding claim 14.

Wang '971 does not explicitly teach wherein the accessing comprises selecting the bitmap ~~is accessed~~ from a table of different bi-level bitmaps.

Curry teaches wherein the accessing comprises selecting the bitmap ~~is accessed~~ from a table of different bi-level bitmaps (**col 3, lines 62 through col 4, line 5**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Wang '971 to include the accessing comprises selecting the bitmap ~~is accessed~~ from a table of different bi-level bitmaps taught by Curry to save processing time.

Regarding claim 15.

Wang '971 does not explicitly teach wherein the accessing ~~the bitmap includes comprises~~ using a gray level parameter value as an index into the table of the different bi-level bitmaps.

Curry teaches wherein the accessing the bitmap includes comprises using a gray level ~~parameter~~ value as an index into the table of the different bi-level bitmaps (**col 3, line 62 through col 4, line 5**).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Wang '971 to include wherein the accessing the bitmap includes comprises using a gray level ~~parameter~~ value as an index into the table of the different bi-level bitmaps taught by Curry to save processing time.

Regarding claim 16.

Wang '971 discloses , wherein ~~an~~ the using comprises determining which of the image blocks to select based on image intensity levels of the image blocks (col 4, lines 1-28).

Regarding claim 17.

Wang '971 discloses using unselected ones of the image blocks to ~~reconstruct~~ construct a version of the halftone image free of the embedded information (**Figs. 1 & 7, col 3, lines 54-63 & col 4, lines 29-44**).

Regarding claim 18.

Wang '971 discloses wherein the extracting the information includes comprises using probabilistic analysis to produce a set of probability parameters, using the set of probability parameters to select ~~the most~~ a likely sequence of graphical code word symbols ~~image blocks corresponding to the information image block sequence~~ originally encoded into the halftone image, and converting the most likely selected sequence of graphical code word symbols ~~image blocks~~ into the extracted information

(Wang '971 discloses watermark detection circuit, checkerboard pattern, bitmaps, and pixel-topixel, cluster-to-cluster, etc. one skilled in the art knows to use a set of probability to analyze or to detect embedded pattern; col 1, line 61 through col 2, line 19 & col 7, lines 13-24).

Regarding claim 19.

Wang '971 discloses an apparatus for performing the method of claim 12 **(Fig. 11, col 7, lines 1-13).**

Regarding claim 20.

Wang '971 discloses an article comprising memory encoded with a data for causing a processor to perform the method of claim 12 **(Figs. 8 & 11, col 8, lines 13-29).**

Regarding claim 35.

Claim 35 recites identical features as claim 12, except claim 35 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 12 are also equally applicable to claim 35.

Regarding claim 36.

Claim 36 recites identical features as claim 14, except claim 36 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 14 are also equally applicable to claim 36.

Regarding claim 37.

Claim 37 recites identical features as claim 16, except claim 37 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 16 are also equally applicable to claim 37.

Regarding claim 38.

Claim 38 recites identical features as claim 18, except claim 38 is a computer-readable medium claim. Thus, arguments similar to that presented above for claim 18 are also equally applicable to claim 38.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on Monday to Friday, from 8:30 am -5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on 571-272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/S Kau/
Examiner, Art Unit 2625
3/24/2008

/Gabriel I Garcia/

Acting SPE of Art Unit 2625